

심혈관 환자맞춤형 차세대 정밀의료기술 선도연구센터(RLRC) 2단계 1차년도 정기세미나

- 일정 : 2024년 07월 03일(수), 16:30~17:30
- 연사 : UNIST 바이오메디컬공학과 강현욱 교수
- 주제 : Advanced 3D bioprinting technology to produce engineered tissues with enhanced functionality
- Abstract :

The advancement of tissue engineering is opening new possibilities for the restoration and treatment of human defects. However, conventional approaches have limitations in implementing complex human tissues and organs. In this regard, 3D bioprinting technology presents new possibilities to overcome these limitations. 3D bioprinting technology enables the creation of flexible and customized three-dimensional structures using living cells, biomaterials, and biomolecules. This feature has enabled the development of engineered tissues with complexity and high functionality, surpassing the capabilities of traditional tissue engineering techniques. Various advanced bioprinting technologies have been developed, allowing the development of even more complex engineered tissues.

My colleagues and I have developed bioprinting technologies that can control the morphological features of cells for the development of highly functional engineered tissues. We have created a high-precision 3D spheroid printing technology that enhances both cell-to-cell and cell-ECM interactions. Additionally, we have developed a technology capable of precise patterning of microvasculature composed of capillaries. The developed technologies have shown high efficacy in artificial regeneration of tissues such as the liver, pancreas, vascular and adipose tissue. Furthermore, these technologies have demonstrated excellent performance in the development of cancer models and cell therapy. In this presentation, I will discuss the advanced bioprinting technologies developed in our laboratory and their applications in tissue engineering, including artificial regeneration of various tissues/organs and their potential in cancer models and cell therapy.

Keywords: 3D bioprinting, engineered tissue, disease model

